



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/782,935	02/23/2004	Ralf Lindner	Q79846	7686
23373 7590 12/22/2006 SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037			EXAMINER LAZORCIK, JASON L	
			ART UNIT	PAPER NUMBER
			1731	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		12/22/2006	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/782,935

Applicant(s)

LINDNER ET AL.

Examiner

Jason L. Lazorcik

Art Unit

1731

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 November 2006 and 23 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) 16-19 and 22-24 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15, 20, 21 and 25-31 is/are rejected.
- 7) ☒ Claim(s) 11 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>02/23/2004</u> . | 6) <input checked="" type="checkbox"/> Other: <u>08/13/2004</u> . |

Election/Restrictions

Applicant's election without traverse of claims 1-15,20-21, and 25-31 in the reply filed on 11/09/2006 is acknowledged.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-15, 20-21, and 25-31 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With respect to Claim 1, the precise meaning of the term "energy densities of the order of the working energy densities of optical systems for microlithography" is unclear and indefinite. Specifically, said term is understood to vary among related systems and potentially to vary even within a given system. Due to the aforementioned deficiency, the scope of the instant claim and therefore the scope of patent protection are rendered unclear and indefinite.

Claim 1 recites the limitation "the peroxy defect level in the quartz glass material" in lines 4-5. There is insufficient antecedent basis for this limitation in the claim.

With respect to Claim 4, it is unclear precisely what is intended by maintaining an "environment in a production flame"

Claim 4 recites the limitation "the ozone concentration" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim 11 recites the limitation "the energy density" in Line 2. There is insufficient antecedent basis for this limitation in the claim.

Further with respect to Claim 11, the limitation as recited in lines 2-3 "wherein the local hydrogen concentration profile is matched to a local distribution of the energy density when the quartz glass material is in use" is understood to vary in accord among different end use applications. For this reason, the particular metes and bounds for which applicant seeks patent protection are rendered unclear and indefinite.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3,8-15, 20-21, and 28-31 are rejected under 35 U.S.C. 102(b) as being anticipated by Yamagata (US 5,086,352).

Regarding Claim 1, Yamagata teaches the fabrication of a fused silica (or alternately a quartz glass member) with an enhanced resistance to excimer laser damage in the wavelength range from 360nm to 150nm (column 5, Lines 9-24). Further as set forth in the reference Claim 7, the disclosed method results in a material "substantially free from oxygen defects" or that "the concentration of deficient oxygen atoms and excess oxygen atoms (peroxy-linkages) in the glass matrix...are lower than the limits of detection" (Column 12, Lines 9-15).

With respect to Claims 2-3, the instant reference clearly indicates that the glass material may be produced by either direct deposition (Column 10, Lines 1-3) or by a soot process (Column 10, Lines 28-30).

Regarding Claim 8, the instant reference teaches hydrogen gas concentrations in the final product between 5×10^{16} to 5×10^{19} (molecules/cm³). This disclosure is understood to read upon the indicated claim where the indicated concentration of 5×10^{16} molecules/cm³ is understood to be "in a range of less than about 10^{16} /cm³"

Claims 9 and 14-15 anticipated in light of the Yamagata disclosure wherein said reference teaches that "the ingots were subsequently heated under a hydrogen gas atmosphere at a pressure of 10 atmospheres in the same electric furnace at about 500° to 900°C" (Column 22, Lines 13-20).

Claims 10 and 11 are anticipated by the Yamagata reference wherein the disclosed manufacture process produces a "doping defined concentrations of hydrogen molecules, depending on the wavelength of the ultraviolet light involved" (Column 7, Lines 1-14).

Claims 12, 13 are anticipated by the instant reference wherein it is disclosed that "the blank is made of a high-purity synthetic silica glass material ...which contains concentrations of OH groups and chlorine (Cl) distributed therein" (Column 6, Lines 37-52).

Claims 20-21 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Yamagata. In the instant case, Claim 21 is drawn to "a quartz glass material" made the process set forth for the

Art Unit: 1731

manufacture a quartz glass material as outlined in Claim 1. As such, Claim 21 amounts to a product-by-process claim for the processes set forth in Claim 1.

In the event any differences can be shown for the product-by-process claim 21, as opposed to the product taught by the Yamagata reference, such differences would have been obvious to one of ordinary skill in the art as routine modification of the product in the absence of a showing of unexpected results, see *In re Thorpe*, 227 USPQ 964 (CAFC 1985). As the afore mentioned claim is a product by process claim, it is deemed that "[A]ny difference imparted by the product by process claims would have been obvious to one having ordinary skill in the art at the time the invention was made because where the examiner has found a substantially similar product as in the applied prior art the burden of proof is shifted to the applicants to establish that their product is patentably distinct, ..." *In re Brown*, 173 USPQ 685, and *In re Fessmann*, 180 USPQ 324. Further, "[P]rocess limitations are significant only to the extent that they distinguish the claimed product over the prior art product." *In re Luck*, 177 USPQ 523 (1973).

Claims 28-31 are anticipated by the teachings of Yamagata in light of the rejections of Claims 1-3 and 8-15 under 35 USC 102(b) as presented above.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 1731

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 4-6, 25-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamagata (US 5,086,352) as applied under 35 USC 102(b) to claim 1 above and in further view of the analogous prior art teachings of Borrelli (US 2002/0194869 A1).

Borrelli teaches that "it has been found that the more oxidizing the flame used to make the glasses the more 260 nm absorption is produced with laser irradiation...One model for the formation of the 260 absorption involves the reaction of dissolved molecular oxygen with light to give oxygen atoms. The reactive oxygen atoms further react with molecular oxygen to give ozone (260 nm absorption)...Regardless of the mechanism of formation it is important to note that the 260 nm absorption is related to the molecular oxygen content of the glass." (Pg1, ¶[0010-0011]).

In light of the Borrelli disclosure, it would have been obvious to one of ordinary skill in the art at the time of the invention to seek to minimize or substantially eliminate the highly oxidative species of ozone from the fused silica deposition zone. One obvious method to reduce the effect of the molecular oxygen in the reaction zone would have been to dilute the reactive species with a substantially inert carrier gas like nitrogen. Since nitrogen is a principle constituent of air, diluting the reaction gasses

Art Unit: 1731

with "cold air" would have been an obvious choice for one of ordinary skill in the art at the time of the invention seeking reduce the oxidizing character of the flame used to make the fused silica glass.

Claims 7 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamagata (US 5,086,352) and Borrelli (US 2002/0194869 A1) as applied under 35 USC 103(1) to claim 4-6 and 25-26 above and in further view of the analogous prior art teachings of and Moini (US 6,375,905).

Where substantial elimination of molecular oxygen is preferred to dilution of said reactive species, it would have been readily apparent to one of ordinary skill in the art at the time of the invention to utilize a catalytic decomposition of ozone as set forth by Moini (US 6,375,905). Specifically, Moini teaches the use of an ozone depleting catalyst layer which substantially depletes ozone from an atmosphere in contact there with (abs). In particular, the instant reference utilizes manganese dioxide as the principle catalyst in the same manner as in the applicants preferred embodiment as set forth on page 8 of the present specification. Therefore it would have been obvious for one of ordinary skill in the art at the time of the invention, recognizing the deleterious effects of oxidizing species in the reaction flame of a fused silica reaction, to seek to substantially eliminate highly oxidative ozone from the reaction zone by the catalytic removal process taught by Moini.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason L. Lazorcik whose telephone number is (571)

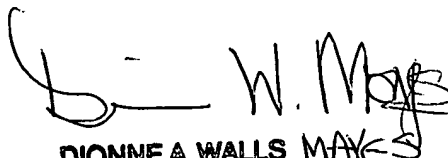
Art Unit: 1731

272-2217. The examiner can normally be reached on Monday through Friday 8:30 am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on (571) 272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JLL


DIONNE A. WALLS
PRIMARY EXAMINER